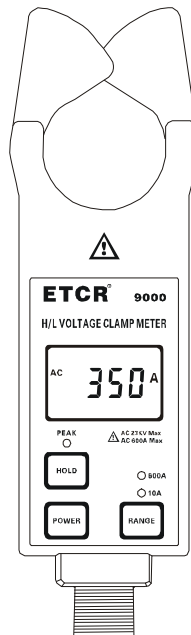


# ETCR<sup>®</sup> H/L VOLTAGE CLAMP METER

ETCR 9000  
ETCR 9000A  
ETCR 9000B  
ETCR 9100  
ETCR 9100A  
ETCR 9100B

<http://www.etcrc.com>



## MANUAL

Guangzhou ETCR Electronic Technology Co., Ltd

Catalogue

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## Warning





Thanks for your purchase of **ERCR9000** H/L Voltage Clamp Meter of our company. In order to make better use of this product, please make sure to:

----Read this manual in detail and the operator must totally understand this manual and be in proficient in operation of this meter before making test on spot.

----Comply strictly to the security rules and notice items listed on this manual.

- ◆ In any case, it should pay special attention to safety in use of this meter, particularly in measurement of circuitry with more than AC100V and above voltages.
- ◆ If the voltage of tested circuitry has exceeded 600V, it must be used by connecting with an insulation rod.
- ◆ As it is very dangerous of high voltage transmission line, the operator must get strict training and the relevant certification on high-pressure operation of the state before using this meter and making a field test.
- ◆ It is strictly forbidden to use this meter to test the wire or convergence generatrix without any insulation.
- ◆ Please pay attention to marked words and symbols on panel or backboard of this meter.
- ◆ Please do not put or store this meter in the place of high temperature, with moisture, with frozen dew or with direct daylight irradiation for a long time.
- ◆ Please note the battery polarity when replacing battery, and remove the battery if do not use this meter for a long time.
- ◆ It must be operated by qualified staff that has the authorization on tearing down or repairing this meter.
- ◆ Please do not use it when there is any damage on the transducer clamp or other parts of this meter.
- ◆ To avoid the impact of transducer clamp, it needs to maintain this meter regularly. Do not use corrosive or coarse articles to clean, but use soft cloth (such as glasses cloth), dipping clean

anti-rust desiccant lubricant (such as WD-40), and making a gentle wiping.

- ◆ For the reason of this meter, in case that any danger may occur if continue to use it, stop using it immediately and seal it up for keeping at once, which shall be dealt with by qualified authorization agency.
- ◆ The danger symbol “” on the meter and the manual, the user must make safe operation according to the indication.
- ◆ The extremely dangerous symbol “”, the user must make safe operation according to the indication.
- ◆ To test unknown current, please choose “600A” level to test firstly.
- ◆ It suggests that this meter shall be made insulation intensity test at least once annually. (AC40KV/rms between insulation pole and clamp core.)
- ◆ As to the part with “\*” mark in this manual, it is only limited to **ETCR9000A** (infrared transmission data type).

## I Profile






**ETCR9000** Series H/L Voltage Clamp Meter has broken through the traditional structure, which is specially well-designed for measuring high voltage current, adopting the latest CT technology and integrated mask digital technology, formed by composition of a special use clamp meter with a high-voltage insulation rod, as to **ETCR9000A** type -- **infrared transmission of test data**, also equipped with receivers, which can monitor the tested data in a long distance on real-time. If not using an insulation rod, it can be also used as a high precision low-voltage clamp meter, or an alternating current meter, which can accurately measure 1mA of current or leakage current.

**ETCR9000** Series H/L Voltage Clamp Meter has an innovative integrated design between transducer clamp and transducer domain, ensuring the high-precision, high-reliability, and

high-stability on constant test perennially.

**ETCR9000** Series H/L Voltage Clamp Meter is connected with insulation rod, which can be used for measuring high voltage current that is below 23KV, on-line current measurement, also having peak maintenance, data preservation, data storage, infrared transmission and other functions, and its special clamp meter can make it easier for clamping or evacuating the tested wire through pressing or pulling back the insulation rod, time-saving and fast, widely used in transformer substation, power plant, industrial and mining enterprises as well as the inspection station and electrician maintenance departments for electrical current detection and field electrical operations. It can also replace the H/L voltage transforming ratio tester, that is, to detect the high and low current for primary circuit and secondary circuit separately, and then calculate to conclude the change of high and low pressure. The insulation rod is light and convenient, with the advantages of anti-moisture, high temperature resistance, anti-impact, bending resistance, high insulation, flexibility and other characteristics.

## II Electrical Symbols

	Extremely Dangerous! The operator must strictly abide by the safety rules. Otherwise, there is electric injury danger, causing personal damage or casualty accident.
	Dangerous! The operator must strictly abide by the safety rules. Otherwise, there is electric injury danger, causing personal damage or casualty accident.
	Warning! It must strictly abide by the safety rules. Otherwise, it may cause personal damage or casualty accident.
	Alternating Current (AC)
	Direct Current (DC)

### III Technical Specifications

<b>Function</b>	High voltage AC current measurement, low voltage AC current, leakage current measurement, on-line AC current supervision.
<b>Power Supply</b>	DC6V Alkaline Dry Battery (1.5V AAA X 4)
<b>Test Method</b>	Clamp CT, Integral Method
<b>*Transmission Method</b>	Infrared Transmission, the maximum distance for direct transmission is about 10m.
<b>Display Mode</b>	4 digital LCD display, backlight function, suitable for dark place.
<b>LCD Dimension</b>	47mm x 28.5mm
<b>Meter Dimension</b>	W/H/T: 76mm×255mm×31mm
<b>Clamp Diameter</b>	φ48mm
<b>Sampling Speed</b>	Around 2 times/second
<b>Measurement Scope</b>	1mA~600A (50/60Hz Auto Identification)
<b>Resolution Rate</b>	1mA
<b>Measurement Range</b>	10A/600A, Double measurement ranges can be switched by manual, and it can be transferred automatically within each measurement range.
<b>Test Precision</b> ( 23℃±5℃ , Below 80%RH )	1mA~299mA: ±1%±3dgt
	300mA~10.00A: ±1.5%±5dgt
	0.0A~49.9A: ±1.5%±5dgt
	50.0A~199.9A: ±2%±5dgt
	200A~399A: ±2.5%±5dgt
	400A~600A: ±3%±5dgt
<b>Circuit Voltage</b>	Test for the circuit below 23KV (operated with insulation rod)

### Technical Specifications (Continued Table)

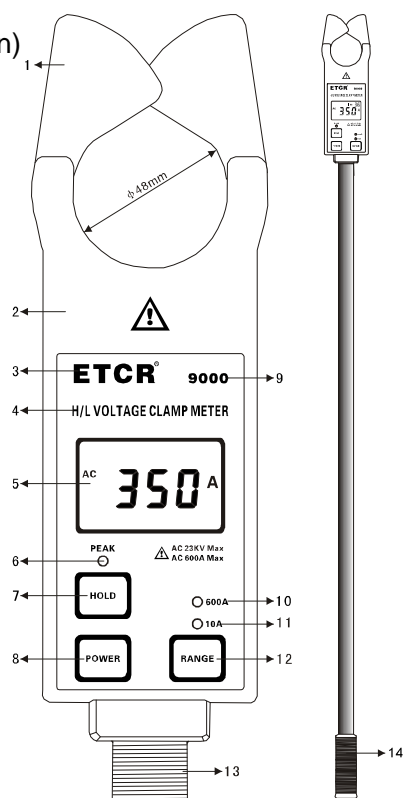
<b>Data Memory</b>	99 Groups, during storage, the symbol " <b>MEM</b> " gives indication, " <b>FULL</b> " mark will flash to indicate the memory has been full.
<b>Peak Maintenance</b>	The function of automatic capture and maintain the maximum average value, under general test mode, press <b>HOLD</b> button longer till PEAK light is bright, that is, start PEAK test function, also known as peak test.
<b>Data Preservation</b>	Under general test mode, press <b>HOLD</b> button to preserve data, " <b>HOLD</b> " symbol display.
<b>Data Reference</b>	" <b>MR</b> " symbol indicates, it can read the stored data by turning upwards and downwards.
<b>Overflow Display</b>	Exceed measurement range overflow function: " <b>OL A</b> " symbol display
<b>*No signal Indicator</b>	When the receiver has not received transmit signal, it will display " <b>no- -</b> "signal dynamically.
<b>Auto Shut Down</b>	In about 15 minutes after booting, the meter will shut down automatically, in order to decrease the battery consumption.
<b>Battery Voltage</b>	When the battery voltage is below 4.8V, the symbol of battery voltage " <b>⎓</b> " will show to remind to replace battery.
<b>Meter Quality</b>	Tester: About 335g (Including battery), total quality of meter: about 2.5Kg (including insulation rod and battery.)
<b>Work Temperature and Moisture</b>	-10℃~40℃; Below 80%Rh
<b>Storage Temperature and Moisture</b>	-10℃~60℃; Below 70%Rh
<b>Insulation Rod Dimension</b>	φ32mm, 1m/Section (5 Sections)

## Technical Specifications (Continued Table)

<b>Insulation Intension</b>	AC 40KV/rms (Between insulation rod and clamp core)
<b>Structure</b>	Anti-Dripping Type II

## IV Structure

1. Transducer clamp  
(including transducer domain)
2. Tester
3. Brand Sign
4. Product Name
5. LCD Display
6. Peak Test Mode Indicator
7. **HOLD** Key  
(Key Combination)
8. **POWER** Key  
(Key Combination)
9. Product Type
10. 600A Level Indicator
11. 10A Level Indicator
12. **RANGE** Measurement  
Range Switch Key
13. Insulation Rod Connector
14. Handle

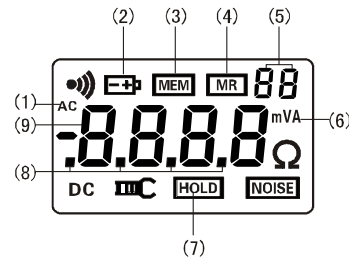











## V LCD Display

### 1. LCD Display Screen

- (1). AC Symbol
- (2). Symbol for low battery voltage
- (3). Data Storage Symbol
- (4). Data Reference Symbol
- (5). 2-digit Storage Data Serial Number
- (6). Unit Symbol
- (7). Data Locked Symbol
- (8). Decimal System Radix Point
- (9). 4-Digit LCD Digital Display



### 2. Explanation for Special Symbols

- (1).  Symbol for low battery voltage. When the battery voltage is lower than 4.8V, this symbol will show. Please replace battery in time.
- (2). This symbol "OL A" denotes that the current on test has exceeded the maximum measurement limit of the meter.
- (3).  "MEM" Memory Mode, it will show during the storage process of the data.
- (4).  "FULL" Symbol, when the memory data has been filled with 99 groups, it will show "FULL" symbol by flash, which means it cannot continue to store data.
- (5).  "MR" data reference symbol, which is shown during referring to data, meanwhile, it will show the serial number of data in storage.
- (6).  "End" exit symbol, it will show during sign out.
- (7).  "dEL" data delete symbol, it will show during deleting.
- \* (8).  "no- "no reception signal indicator, dynamic display. It is possible that tester has not been placed in test mode.

### 3. Display Demonstration

- (1). — The current on test is: 0.002A (2mA)



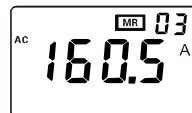
- (2).——Lock Display Data  
 ——This data is automatically stored in Group 3  
 ——The current on test is: 160.5A



- (3).——The current on test is: 571A  
 ——Display symbol for low battery voltage.  
 Please replace battery.



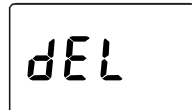
- (4).——Refer to data of group 3 in storage  
 ——The current on test is: 160.5A



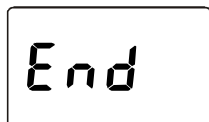
- (5).——“FULL” flash display:  
 Memory are full of 99 groups  
 ——It cannot store more unless delete the memory



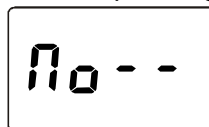
- (6).——Data Delete Indicator “dEL”




(7).——Exit Function Indicator “End”



\* (8).——“no- -”dynamic display:  
No reception signal



## VI Operation Ways

	Please check all parts of the meter carefully before usage to see whether there is any damage. And make sure no damage before usage.
	To install battery according to the illustration of this manual.

### A. Tester Operation

#### 1. Power On/Off

Press **POWER** button for power on, LCD display, entering normal test mode. If LCD display is relatively dark after power on, it is possible that battery voltage is a bit lower. Please replace battery. In 15 minutes after power on of the meter, LCD will continue flashing to give hint for automatic power off, after 30 minutes for continuous flash of LCD, it will shut down automatically, in order to lower the battery consumption. In case of LCD continuous flash, press **POWER** button, then the meter will continue to work.

Under HOLD mode, press **POWER** button for power off.

Under general test mode, press **POWER** button for

power off.

Under PEAK test mode, firstly press **POWER** button for exit from PEAK test mode, returning to general test mode, then press **POWER** button for power off. That is, under PEAK test mode, it needs to press **POWER** button twice for power off.

Under data reference mode, firstly press **POWER** button longer (over 3 seconds) for exit from data reference mode, returning to general test mode, then press **POWER** button for power off. During the exit from data reference, it will show "End" symbol.

## 2. Gear Shift Choice


Only under test mode, it is available for gear choice.

Gear choice button **RANGE** is self-lock button, so it needs to press a bit heavier.

Press **RANGE** button to choose 10A or 600A level, and the relevant indicator light will light. If the current on test is unknown, please choose 600A level firstly, and then make the most suitable gear level according to the test result.

Under data reference mode, both gear shift indicator and PEAK light are not bright.


## 3. General Test

	High voltage, extremely dangerous! It must be operated by qualified staff that has acquired authority. The operator must strictly abide by the safety rules. Otherwise, there is electric injury danger, causing personal damage or casualty accident.
	Dangerous! It cannot be used to measure the circuit over 23KV voltage. Otherwise, there is electric injury danger, causing personal damage or equipment damage.
	Dangerous! It cannot be used to measure the circuit over 600A voltage. Otherwise, there is electric injury danger, causing personal damage or equipment damage.

General Test: In the process of test, it will show the tested current value on real time by LCD display, and LCD data will vary with the current change. When the tester is removed away from the lead on test, it will not preserve the test result, LCD display will return to zero.

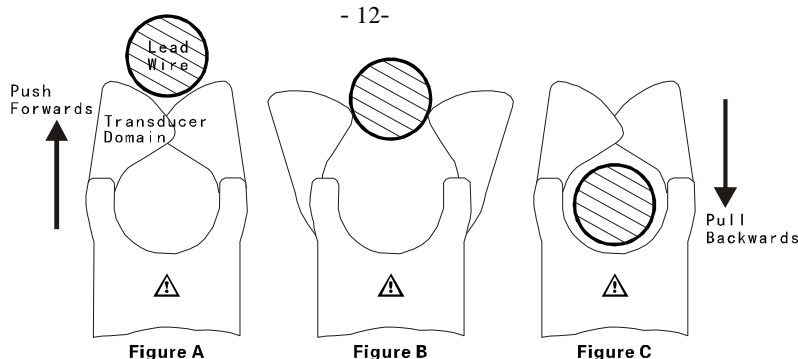
In general test mode, it is suitable for close distance measurement, convenient for circuit test by direct read of LCD data.

(\*Special note: ETCR9000A type adopts infrared transmission of test data, which has no limit for read display data on receiver. The display data on receiver are totally the same with display emission data of tester, so it is very straight no matter in which test way by using ETCR9000A type.)

	Before test, firstly to connect insulation rod, which must be connected in right position, and then to connect tester, avoiding the impact of meter to ground surface.
	Make sure to use specially equipped insulation rod to connect with the meter.
	After test, it should incline the insulation rod accordingly on drawing in. Firstly to tear down the tester and then the insulation rod, avoiding the impact of meter to ground surface.

After normal boot, place the lead in the middle of clamp transducer domain, as shown in Figure A, with the meter transducer domain perpendicular to the lead, pushing the meter forwards to clamp the lead on test, showing the result on LCD display. If showing "OL A", it means the lead current on test has exceeded the maximum volume on the level. Please select a higher gear level or a meter with greater measurement limit.

To pull backwards can make the meter remove from the lead on test, as shown in Figure C, on removing, please try to keep the meter transducer domain perpendicular to the lead.



Under HOLD mode, press **HOLD** button to cancel HOLD function, and return to general test mode.

Under data reference mode, press **POWER** button longer (over 3 seconds) to exit from data reference mode, returning to general test mode.

Under PEAK test mode, press **POWER** button for exit from PEAK test mode, returning to general test mode.

After data deletion, it will return to general test mode automatically.

	<p>Attention! For the sake of safety, on testing strong current, as long as the correct operation test has been finished on confirmation, please remove the meter away from the lead on test.</p>
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#### 4. PEAK Test

PEAK Test: Peak Test. In the process of test, the meter will make automatic comparison on the changes in measured current, indicating the maximum average value and maintain it, when the meter is removed away from the lead on test, the test result will be kept consistently, suitable for the circuit test on those LCD data hard to be read directly.

Under general test mode, press **HOLD** button longer (over 3 seconds), PEAK indicator light will be bright, entering PEAK test mode. That means meter will show and automatically keep the maximum average value in the test.

Under any other mode, it must be returned to general test mode, and then make PEAK test according to the above operation.

Press **POWER** button to exit from PEAK test mode, returning to general test mode, and it will display "End" symbol during the exit.

#### **5. Data Maintenance**

Under general test mode, press **HOLD** button shortly to keep LCD display, "**HOLD**" symbol shows. Press **HOLD** button shortly again for release of data lock, returning to general test mode, and "**HOLD**" symbol disappears.

#### **6. Data Memory**

Under general test mode, press **HOLD** button to maintain data, meanwhile, the meter will automatically form serial numbers, and memory the current preserved data. During the storage, "**MEM**" symbol will show once by flash. This meter can memory 99 groups of data, in case of full storage, "**FULL**" symbol will show by flash continuously, and it cannot continue to memory until cleaning out the previous memory.

#### **7. Data Reference**

Under general test mode, press **HOLD** button + **POWER** button to enter data reference mode, showing "**MR**" symbol, meanwhile, it will automatically display data saved in the group 1. Then press **HOLD** button or **POWER** button to read the stored data by turning upwards or downwards in cycle. It will return to the group 1's data automatically after reaching the last group's data in storage.

Press **POWER** button longer (over 3 seconds) to exit from data reference mode, returning to general test mode. During the exit, it will show "End" symbol.

#### **8. Data Deletion**

Under data reference mode, press **HOLD** button + **POWER** button to delete all the data in storage, and return to general test mode. During the deletion of data, it will show "dEL" symbol.

#### **\*9. Data Transmission**

ERCR9000A TYPE has<sup>14</sup> the function of infrared data transmission. When the meter is under test mode, the test result will be transferred to receiver through infrared transmission, and the receiver will show the test result on real-time, being clear at a glance.

Only under test mode, can it launch infrared data. If the receiver has not received emission signals, it will show "no - -" symbol dynamically.

The maximum distance for ERCR9000A type data emission and reception is the about 10m. However, with the decreasing of the battery voltage, the reception distance will gradually shorten. In case that the battery voltage is badly insufficient, it is possible to have no way to receive data. (When the battery voltage is 5V, the reception distance is about 7m).

#### **\* B. Operation of Receiver**

##### **1. Power On/Off**

Press **POWER** button for power on, LCD display, entering receiving data mode. If LCD display is relatively dark after power on, it is possible that battery voltage is a bit lower. Please replace battery. In 15 minutes after power on of the receiver, LCD will continue flashing to give hint for being power off, after 30 seconds for continuous flash of LCD, it will shut down automatically, in order to lower the battery consumption. In case of LCD continuous flash, press **POWER** button, then the receiver will continue to work.

Under HOLD mode, press **POWER** button for power off.

Under data reference mode, firstly press **POWER** button longer (over 3 seconds) for exit from data reference mode,



returning to receiving data mode, then press **POWER** button for power off. During the exit from data reference, it will show "End" symbol.

## **2. Data Reception**

After normal power on, the receiver will under receiving mode. If there are emission data, the receiver will show the test result on real time. If it has not received any signal, the receiver will search signals constantly, and show "no - -" symbol dynamically.

## **3. Data Maintenance**

Under receiving data mode, press **HOLD** button shortly to keep LCD display, "**HOLD**" symbol shows. Press **HOLD** button shortly again for release of data lock, returning to receiving data mode, and "**HOLD**" symbol disappears.

## **4. Data Memory**

Under receiving data mode, press **HOLD** button to maintain data, meanwhile, the receiver will automatically form serial numbers, and memory the current preserved data. During the storage, "**MEM**" symbol will show once by flash. This receiver can memory 99 groups of data, in case of full storage, "**FULL**" symbol will show by flash continuously, and it cannot continue to memory until cleaning out the previous memory.

## **5. Data Reference**

Under receiving data mode, press **HOLD** button + **POWER** button to enter data reference mode, showing "**MR**" symbol, meanwhile, it will automatically display data saved in the group 1. Then press **HOLD** button or **POWER** button to read the stored data by turning upwards or downwards in cycle. It will return to the group 1's data automatically after reaching the last group's data in storage.


Press **POWER** button longer (over 3 seconds) to exit from data reference mode, returning to receiving data mode. During the exit, it will show "End" symbol.


## 6. Data Deletion

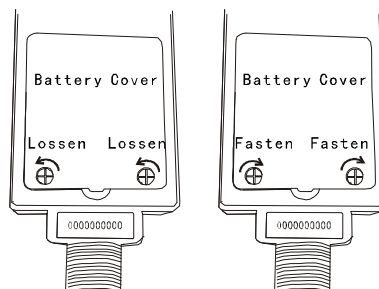
Under data reference mode, press **HOLD** button + **POWER** button to delete all the data in storage, and return to receiving data mode. During the deletion of data, it will show “dEL” symbol.

## VII Replacing Batteries

- 16 -

	Warning! In case that the battery's cover board is not well closed, it is forbidden to make test. Otherwise, it is dangerous.
	Pay attention to the polarity of battery, in case of damage to the meter.
	Do not mix in the use of new and old batteries.

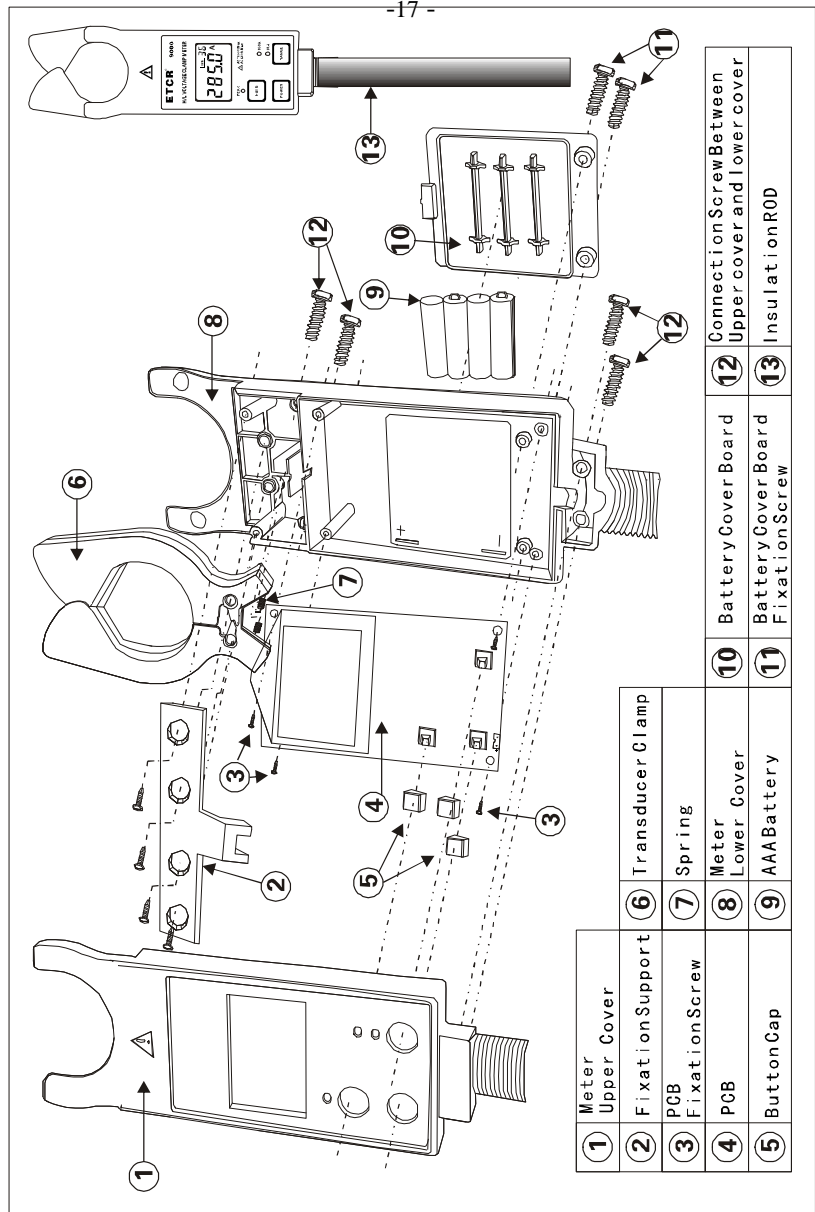
1. When the battery voltage is below 4.8V, the meter will show “” symbol, indicating the batteries have no sufficient power content. Please replace batteries.
2. Power off, to make sure the meter is under the state of power off. To loosen two screws of the battery cover board, open the cover board to replace brand-new qualified batteries on. It should pay special attention on the battery specification and polarity, cover the board well and fasten the two screws.
3. Press **POWER** button to check whether the meter can be powered on normally. If not, please repeat the operation according the step 2.



## VIII Packing List

Tester	1PCS
*Receiver	1PCS
Insulation Rod (1M/Section)	5 Sections
Meter Box	1PCS
Battery (Alkaline Dry Battery AAA)	4 PCS (* or 8 PCS)
User's Manual/ Maintenance Card/ Conformity Certificate	1SET

Enclosed with Tester Assembly Drawing





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